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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of — Atty. Docket

WAYNE M. SCHOTT — PHA 23,820

Serial No.: 09/464,867 — Group Art Unit: 2643

Filed: December 16, 1999 — Examiner: D. Harvey

Title: A LOUDSPEAKER HAVING A DUAL CHAMBER ACOUSTICAL ENCLOSURE WITH TWO EXTERNAL VENTS AND ONE INTERNAL VENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is an original copy of an Appeal Brief in the above-identified patent application.

Please charge the fee of $330.00 to Deposit Account No. 14-1270.

Respectfully submitted,

By _____
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CERTIFICATE OF MAILING

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By Burnett James
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WAYNE M. SCHOTT	PHA 23,820
Serial No.: 09/464,867	Group Art Unit: 2643
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A LOUDSPEAKER HAVING A DUAL CHAMBER ACOUSTICAL ENCLOSURE WITH TWO EXTERNAL VENTS AND ONE INTERNAL VENT

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Sir:

APPEAL BRIEF

This is an appeal from the Examiner of Group 2643 finally rejecting claims 1-20 in this application.

(i) Real Party in Interest

The real party in interest in this application is PHILIPS ELECTRONICS NORTH AMERICA CORPORATION by virtue of an assignment from the inventor recorded on December 16, 1999, at Reel 010482, Frame 0374.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences related to this application.

(iii) Status of the Claims

Claims 1-20 stand finally rejected by the Examiner.

(iv) Status of Amendments

There was no Amendment filed after final rejection of the claims on June 1, 2004.

(v) Summary Of Claimed Subject Matter

As described in the specification on page 5, line 16 to page 6, line 5 and as shown in Fig. 1, the subject invention concerns a loudspeaker system 20 having an enclosure 22 formed with a first and a second sub-chamber 26 and 28 separated by an internal wall 24. A loudspeaker 30 is positioned in an opening 33 in the internal wall 24. An internal vent 40 is also formed in the internal wall 24 and acoustically connects the first and second sub-chambers 26 and 28. In addition, a first external vent 42 is formed in an external wall of the enclosure 22 and acoustically connects the first sub-chamber 26 with the external environment surrounding the enclosure 22, while a second external vent 44 is formed in an external wall of the enclosure 22 and acoustically connects the second sub-

chamber 28 with the external environment surrounding the enclosure 22.

In order that the first and second external vents 42 and 44 significantly contribute to the overall acoustical output of the loudspeaker system 20, as described on page 6, lines 12-16, the volumes of the first and second sub-chambers 26, 28 should be within a specified ratio, and as describe on page 6, lines 18-23, the acoustical masses of the internal vent 40 and the second external vent 44 should be within another specified ratio. In an alternative embodiment, as described in the specification on page 8, lines 4-9, the acoustical masses of the first and second external vents 42 and 44 should be within yet another specified ratio.

(vi) Grounds of Rejection to be Reviewed on Appeal

(A) The invention, as claimed in claims 1-20, stands rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication No. JP 4-301998 to Tamura.

(B) The invention, as claimed in claims 1-20, stands rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura.

(vii) Arguments

(A) The 35 U.S.C. 102(b) Rejection

The Tamura reference discloses a speaker box having a first and a second chamber separated by an internal wall, a speaker unit mounted in an opening in the internal wall, a first vent in the internal wall pneumatically coupling the first and second chambers, and second and third vents coupling the first and second chambers, respectively, with the environment outside of the speaker box.

Appellant would like to point out that the Tamura reference is discussed in the subject application on page 3, line 23 to page 4, line 5, and on page 9, lines 5-18.

In the current rejection, the Examiner states that Tamura teaches "the ratio of the acoustic mass of the internal vent to the second external vent being approximately 3/1 to 7/1, and the ratio of the acoustic mass of the first external vent to the second external vent being approximately 15/1 to 30/1." With regard to the term "approximately" appearing in the claims, the Examiner states "By reciting 'approximately' the Examiner is not restricted to applying a reference which is within the nominal bounds of the recited ratio. Instead, the Examiner is able to apply any reference which meets the structure of the claim, since an 'approximate' ratio can be fairly defined as any existing ratio."

Appellant submits that the Examiner is mistaken. In particular, the term "approximately" does not render the claim

indefinite. In *Andrew Corp. v. Gabriel Electronics, Inc.*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988), the court, in finding that a district court erred in finding the claims invalid for indefiniteness because of the use of the terms "approach each other", "close to", "substantially equal", and "closely approximate", stated "[t]he criticized words are ubiquitous in patent claims. Such usages, when serving reasonably to describe the claimed subject matter to those of skill in the field of the invention, and to distinguish the claimed subject matter from the prior art, have been accepted in patent examination and upheld by the courts."

Since the Examiner did not reject the claims as being indefinite, apparently, the Examiner felt that the claims were definite. Surely, then, the Examiner could not then completely ignore the approximate ranges of the claims when examining the same with regard to the prior art.

Appellant has reviewed a translation of the Japanese reference, and while Tamura mentions the vents having acoustic masses, Tamura neither shows nor suggests that the amount of the acoustic mass of any vent with respect to the acoustic mass of another of the vents should be within any ratio. Appellant submits that the ratio range of the acoustic mass of the internal vent to the acoustic mass of the second external vent is not arbitrary, but rather, serves a particular function. As described in the

specification on page 6, lines 18-23, when the ratio is within the claimed range, an appreciable improvement in the acoustical output of the loudspeaker is achieved over a reasonably broad operating band. This is in contrast with Tamura which discloses a narrow band, particularly a low frequency band loudspeaker system, in which the internal vent is specifically designed and used to minimize distortion due to loudspeaker cone excursions at frequencies lower than the resonant frequency, but does not contribute to acoustical output within the normal operating band. In fact, Tamura discloses that in the narrow low frequency band of interest in the system, the internal vent actually acts as a bypass circuit whose effect is to reduce the acoustical output from the external vents.

Appellant therefore submits that Tamura is missing the key element of the claims, i.e., "wherein a ratio of an acoustic mass of the internal vent to an acoustic mass of the second external vent is in a range of approximately 3/1 to 7/1" and "wherein a ratio of an acoustic mass of the first external vent to an acoustic mass of the second external vent is in a range of approximately 15/1 to 30/1".

With regard to claims 3, 8, 13 and 18, Tamura discloses a first and second sub-chamber, Tamura is silent as to what ratio the volume of one should be to the other.

Appellant submits that as with the ratios of the acoustic masses of the vents, the ratio of the volumes of the first and second sub-chambers are not arbitrary, but lead to a performance of the loudspeaker system which is substantially the opposite from that disclosed in Tamura.

(B) The 35 U.S.C. 103(a) Rejection

The Examiner now states that "Tamura fails to clearly teach that the ratio of the acoustic mass of the internal vent to the second external vent is specifically within the range of 3/1 to 7/1 or that the ratio of the acoustic mass of the first external vent to the second external vent is specifically within the range of 15/1 to 30/1." The Examiner then adds "However, it would have been obvious for one of ordinary skill in the art at the time of the invention to provide vents with different acoustic masses i.e., lengths and/or cross sections, for the purpose of "tuning" the frequency response of the acoustic device. Additionally, it is well known in the art that the size of the passive acoustic radiator i.e., port, vent etc., taken in combination with the size of the sub-chamber(s) will determine the degree of attenuation of the output of the acoustic vibrations from the drive unit."

Appellant does not dispute that varying the size of the passive acoustic radiator may determine the degree of attenuation of the output. However, with regard to Tamura, Appellant submits

that by arranging the acoustic mass of the internal vent to the acoustic mass of the second external vent to be as claimed in claim 1, or by arranging the acoustic mass of the first external vent to the acoustic mass of the second external vent to be as claimed in claim 6, virtually the opposite from which Tamura is seeking is achieved, i.e., a relatively broad operating band (as opposed to a narrow low frequency band), and an improvement (as opposed to attenuation) in the acoustic output of the loudspeaker system. This is tantamount to "teaching away" from the prior art reference.

Appellant makes the same argument as that concerning the ratios of the acoustic masses of the vents, to the ratio of the volumes of the first and second sub-chambers.

(viii) Conclusion

Based on the above arguments, Appellant believes that the subject invention is neither anticipated nor rendered obvious by the prior art and is patentable thereover. Therefore, Appellant respectfully requests that this Board reverse the decisions of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by _____
Edward W. Goodman, Reg. 28,613
Attorney

CERTIFICATE OF MAILING

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On Oct. 26, 2004

By Burnett James

(viii) Appendix

CLAIMS ON APPEAL

1. (Original) A loudspeaker, comprising:

an acoustical enclosure that has an internal wall that divides the enclosure into first and second subchambers, the internal wall being provided with an opening;

an electro-acoustical transducer having a vibratable speaker cone, the electro-acoustical transducer being mounted in the opening provided in the internal wall of the acoustical enclosure;

an internal vent provided in the internal wall of the acoustical enclosure for pneumatically coupling the first and second subchambers;

a first external vent provided in a wall of the first subchamber for pneumatically coupling the first subchamber to an exterior environment outside of the acoustical enclosure;

a second external vent provided in a wall of the second subchamber for pneumatically coupling the second subchamber to the exterior environment;

wherein a ratio of an acoustic mass of the internal vent to an acoustic mass of the second external vent is in a range of approximately 3/1 to 7/1.

2. (Original) The loudspeaker as set forth in Claim 1, wherein the loudspeaker is a broadband loudspeaker.

3. (Original) The loudspeaker as set forth in Claim 1, wherein a ratio of a first volume of the first subchamber to a second volume of the second subchamber is in a range of approximately 0.3 to 2.5.

4. (Original) The loudspeaker as set forth in Claim 1, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

5. (Original) The loudspeaker as set forth in Claim 3, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

6. (Original) A loudspeaker, comprising:

an acoustical enclosure that has an internal wall that divides the enclosure into first and second subchambers, the internal wall being provided with an opening;

an electro-acoustical transducer having a vibratable speaker cone, the electro-acoustical transducer being mounted in the opening provided in the internal wall of the acoustical enclosure;

an internal vent provided in the internal wall of the acoustical enclosure for pneumatically coupling the first and second subchambers;

a first external vent provided in a wall of the first subchamber for pneumatically coupling the first subchamber to an exterior environment outside of the acoustical enclosure;

a second external vent provided in a wall of the second subchamber for pneumatically coupling the second subchamber to the exterior environment;

wherein a ratio of an acoustic mass of the first external vent to an acoustic mass of the second external vent is in a range of approximately 15/1 to 30/1.

7. (Original) The loudspeaker as set forth in Claim 6, wherein the loudspeaker is a broadband loudspeaker.

8. (Original) The loudspeaker as set forth in Claim 6, wherein a ratio of a first volume of the first subchamber to a second volume of the second subchamber is in a range of approximately 0.3 to 2.5.

9. (Original) The loudspeaker as set forth in Claim 6, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

10. (Original) The loudspeaker as set forth in Claim 8, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

11. (Original) A loudspeaker, comprising:

an acoustical enclosure that has an internal wall that divides the enclosure into first and second subchambers, the internal wall being provided with an opening;

an electro-acoustical transducer having a vibratable speaker cone, the electro-acoustical transducer being mounted in the opening provided in the internal wall of the acoustical enclosure;

a first means provided in the internal wall of the acoustical enclosure for acoustically coupling the first and second subchambers;

a second means provided in a wall of the first subchamber for acoustically coupling the first subchamber to an exterior environment outside of the acoustical enclosure;

a third means provided in a wall of the second subchamber for acoustically coupling the second subchamber to the exterior environment;

wherein a ratio of an acoustic mass of the first means to an

acoustic mass of the third means is in a range of approximately 3/1 to 7/1.

12. (Previously Submitted) The loudspeaker as set forth in Claim 11, wherein the first means, second means, and third means have respective first, second and third acoustic masses.

13. (Original) The loudspeaker as set forth in Claim 11, wherein a ratio of a volume of the first subchamber to a volume of the second subchamber is in a range of approximately 0.3 to 2.5.

14. (Original) The loudspeaker as set forth in Claim 11, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

15. (Original) The loudspeaker as set forth in Claim 13, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

16. (Original) A loudspeaker, comprising:

an acoustical enclosure that has an internal wall that divides the enclosure into first and second subchambers, the internal wall

being provided with an opening;

an electro-acoustical transducer having a vibratable speaker cone, the electro-acoustical transducer being mounted in the opening provided in the internal wall of the acoustical enclosure;

a first means provided in the internal wall of the acoustical enclosure for acoustically coupling the first and second subchambers;

a second means provided in a wall of the first subchamber for acoustically coupling the first subchamber to an exterior environment outside of the acoustical enclosure;

a third means provided in a wall of the second subchamber for acoustically coupling the second subchamber to the exterior environment;

wherein a ratio of an acoustic mass of the second means to an acoustic mass of the third means is in a range of approximately 15/1 to 30/1.

17. (Previously Submitted) The loudspeaker as set forth in Claim 16, wherein the first means, second means, and third means have respective first, second, and third acoustic masses.

18. (Original) The loudspeaker as set forth in Claim 16, wherein a ratio of a volume of the first subchamber to a volume of the second subchamber is in a range of approximately 0.3 to 2.5.

19. (Original) The loudspeaker as set forth in Claim 16, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.

20. (Original) The loudspeaker as set forth in Claim 18, wherein the speaker cone has a front surface in communication with the first subchamber, and a rear surface in communication with the second subchamber.